

# Memo

Date: Wednesday, May 26, 2021

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To: Comanche Station CCR Operating Record

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From: Matt Rohr, HDR, Inc.

Subject: Comanche Station CCR Units –Landfill and Bottom Ash Pond  
Determination of Statistically Significant Increases over Background per 257.93(h)(2)

The U.S. Environmental Protection Agency's (EPA's) final Coal Combustion Residuals (CCR) Rule establishes a comprehensive set of requirements for the management and disposal of CCR (or coal ash) in landfills and surface impoundments by electric utilities. Comanche Station, located in Pueblo, Colorado has two CCR units subject to the CCR Rule: the ash landfill and a bottom ash impoundment. The operation and monitoring of the CCR units are described further in the Comanche Station Groundwater Monitoring System Certification (HDR 2021).

The objective of this memorandum is to document the identification of statistically significant increases (SSIs) over background water quality at the CCR units at Comanche. Groundwater monitoring has been conducted to collect eight rounds of background sampling plus the first detection monitoring event as specified under CCR Rule Part 257.94. The water quality collected from the monitoring wells located upgradient of the CCR units has been compiled and statistically analyzed to develop background threshold values (BTVs) for each constituent of interest (COI) for each CCR unit. The Background Water Quality Statistical Certification (HDR 2021a) documents the background sample events and describes the data evaluation performed to select the appropriate statistical method. The first detection monitoring event for the updated groundwater monitoring system was conducted in January 2021, after updates were made to the site's geologic and hydrogeologic conceptual site model. The downgradient monitoring well data were compared against the BTVs and SSIs were identified.

Groundwater was sampled from the six of nine wells around the CCR landfill that had water present: MW-3 and MW-5 (background wells) and at wells MW-1B, MW-2B, MW-4B, and MW-6 for comparison against background water quality. At the impoundment, groundwater was sampled from all seven wells: W-2A (background well) and at wells W-1, W-3, W-4, W-5, W-5B, and W-6 for comparison against background water quality. In addition, four of the six perimeter wells downgradient of the CCR units that had water present were also sampled and compared against background water quality, these include W-7, W-9, W-11 and W-12.

As stipulated in the CCR Rule, eight background groundwater sampling events were completed between August 2020 and December 2020. Background groundwater samples were analyzed for all of the parameters in Appendices III and IV of CCR Rule Part 257. Background sampling is described in detail in the Background Water Quality Statistical Certification (HDR 2021a). The

first detection monitoring event was conducted in January 2021. Detection monitoring groundwater samples were analyzed for all of the parameters in Appendix III of CCR Rule Part 257, as discussed below. The detection monitoring event will be described in detail in the Annual Groundwater Monitoring and Corrective Action Report due January 31, 2022. The annual report will include laboratory data for the reporting period.

## SSI Determination

### Landfill

Groundwater sampling for detection monitoring was analyzed for the CCR Rule Appendix III COIs. The concentrations of Appendix III COIs from each downgradient monitoring well at the landfill were compared against the BTVs and the COIs with SSIs are listed below.

MW-4B	calcium
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### Impoundment

The concentrations of Appendix III COIs from each downgradient monitoring well at the impoundment were compared against the BTVs and the COIs with SSIs are listed below.

W-1	boron, pH
W-3	pH
W-4	pH
W-5	pH
W-5B	pH
W-6	boron, pH
W-9	pH

The identification of SSIs begins the process of further investigation at Comanche. Public Service Company of Colorado (PSCo) has already initiated sampling and analysis for Appendix IV constituents under an assessment monitoring program; and PSCo also intends to evaluate the potential that the SSI resulted from an alternative source other than the CCR.

### References

HDR, 2021. Groundwater Monitoring System Certification - Compliance with the Coal Combustion Residuals Rule Comanche Station. May 2021.

HDR, 2021a. Comanche Station Background Water Quality Statistical Certification for Compliance with the Coal Combustion Residuals Rule. May 2021.